

What is claimed is:

1. A wireless earphone communicating with a mobile phone by wireless signals,  
the wireless earphone comprising:
  - a communication unit receiving and emitting the wireless signals;
  - 5 a rechargeable battery;
  - a feedback-type charging circuit providing a charging current for the rechargeable battery and feeding back charging states of the rechargeable battery; and
  - 10 a microprocessor controlling operations of the communicating unit and outputting a control signal for adjusting the charging current of the feedback-type charging circuit.
2. The wireless earphone as in claim 1, wherein the communication unit comprises:
  - a microphone;
  - 15 a speaker; and
  - a wireless receiving/transmitting module receiving signals from the microphone and transmitting signals wirelessly to a mobile phone, wherein wireless signals transmitted by the mobile phones are also received by the wireless receiving/transmitting module and output by the speaker.
- 20 3. The wireless earphone as in claim 1, wherein the wireless receiving/transmitting module is a Bluetooth™ module.
4. The wireless earphone as in claim 1, wherein the feedback-type charging circuit comprises:
  - a charging current control circuit receiving an input direct current and the control signals, wherein the charging current control circuit also outputs the charging current and changes the charging current value according to the

control signals;

a first detecting circuit detecting the charging current of the charging current control circuit; and

a second detecting circuit detecting the voltage value of the rechargeable

5 battery;

wherein the microprocessor detects the voltage value of the rechargeable battery by the second detecting circuit and the current value of the rechargeable battery by the first detecting circuit and the microprocessor hence changes the charging current and charges the rechargeable battery.

10 5. The wireless earphone as in claim 4, wherein the charging current control circuit comprises:

a first MOS transistor having a third terminal for outputting the charging current;

a second MOS transistor having a first terminal connected to a second

15 terminal of the first MOS transistor, the control signals being input to a second terminal of the second MOS transistor;

a resistor having two terminals connected to the first terminal and the second terminal of the first MOS transistor, respectively; and

a capacitor having two terminals connected to the first terminal of the first

20 MOS transistor and the second terminal of the second MOS transistor.

6. The wireless earphone as in claim 4, further comprising a voltage transforming circuit connected to the output terminal of the charging current control circuit.

7. The wireless earphone as in claim 1, further comprising a buzzer, wherein a

25 tone of the buzzer is controlled by a buzzer control circuit connected between the microprocessor and the buzzer.

8. A charging circuit of a wireless earphone receiving control signals output from a microprocessor and charging a rechargeable battery, the charging circuit comprising:

5        a charging current control circuit receiving an input direct current and the control signals, wherein the charging current control circuit also outputs the charging current and changes a charging current value according to the control signals;

a first detecting circuit detecting the charging current of the charging current control circuit; and

10      a second detecting circuit detecting a voltage value of the rechargeable battery;

wherein the microprocessor detects the voltage value of the rechargeable battery by the second detecting circuit and the current value of the rechargeable battery by the first detecting circuit, and the microprocessor changes the 15 charging current for charging the rechargeable battery.

9. The charging circuit of the wireless earphone as in claim 8, wherein the charging current control circuit comprises:

      a first MOS transistor having a third terminal for outputting the charging current;

20      a second MOS transistor having a first terminal connected to a second terminal of the first MOS transistor, wherein the control signals are input into a second terminal of the second MOS transistor;

      a resistor having two terminals connected to the first terminal and the second terminal of the first MOS transistor, respectively; and

25      a capacitor having two terminals connected to the first terminal of the first MOS transistor and the second terminal of the second MOS transistor.

10. The charging circuit of the wireless earphone as in claim 8, further comprising a voltage transforming circuit connected to the output terminal of the charging current control circuit.

11. A method for charging a wireless earphone, the wireless earphone having a  
5 microprocessor, a feedback-type charging circuit and a charging circuit set therein, wherein the microprocessor controls the feedback-type charging circuit to charge a rechargeable battery, the method having steps as follows:

detecting a voltage level of the rechargeable battery with the feedback-type charging circuit;

10 comparing a difference between the voltage level of the rechargeable battery and a preset value by the microprocessor; and

adjusting a charging current of the feedback-type charging circuit by the microprocessor.

12. The method for charging the wireless earphone as in claim 11, further  
15 comprising a step of detecting the charging current for the microprocessor by the feedback-type charging circuit. .